



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10**

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OFFICE OF
ECOSYSTEMS, TRIBAL AND
PUBLIC AFFAIRS

April 11, 2011

Kyle Free
Blackfoot Bridge EIS Project Manager
Bureau of Land Management
Pocatello Field Office
4350 Cliffs Drive
Pocatello, Idaho 83204

Re: Final Environmental Impact Statement (FEIS) for Blackfoot Bridge Mine
EPA Project Number: 06-006-BLM

Dear Mr. Free:

The U. S. Environmental Protection Agency (EPA) has reviewed the FEIS for the proposed Blackfoot Bridge Mine (CEQ # 20110071) in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act.

The FEIS analyzes the proposed action and two action alternatives for an open pit phosphate mine in Southeast Idaho. The mine would be operated by P4 Production LLC (a wholly owned subsidiary of the Monsanto Company). The project would disturb approximately 739 acres, with mining and reclamation activities occurring over a period of 17 years. Mining related facilities would include: three separate mine pits, two of which would eventually be completely backfilled with waste rock with the third pit partially backfilled; two external waste rock dumps; an ore stockpile; a water management system; water storage ponds; haul roads; and related infrastructure. No mineral processing (aside from crushing) would occur on-site.

Alternatives 1A and 1B are similar to the proposed action in many respects, but include more protective cover systems for the waste rock dumps and backfilled pits to reduce impacts to water quality. The action alternatives would incorporate a laminated geosynthetic clay liner (GCLL) as an element of the cover system. Alternatives 1A and 1B also include a modified and more protective water management plan. In addition, P4 has applied for a Corps of Engineers Clean Water Act (CWA) Section 404 permit for impacts to about 9 acres of jurisdictional surface waters. Alternative 1A is the Agency Preferred Alternative.

Phosphate mining has a long history in Southeast Idaho, influencing the economic and environmental character of the region. P4 has four other phosphate mines in this area. Historic and active phosphate mines in the area have resulted in widespread selenium contamination of mine sites and nearby surface and groundwater. Until these releases are controlled, these sites will continue to pose risks to human health and the environment. Federal agencies and the State

of Idaho are working with mining companies under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) to investigate and remediate the contamination at multiple sites in Southeast Idaho. There is considerable public and private expense (in the tens of millions of dollars) invested in efforts to address historic impacts from phosphate mining in the area, as well as ongoing Clean Water Act violations. Thus, it is critical that the Blackfoot Bridge Mine be designed so that it does not contribute to the existing contamination caused by past mining practices.

In our comment letter on the draft EIS (DEIS), EPA expressed objections and rated the DEIS as EO-2 (Environmental Objections - Insufficient Information). The issues that formed the basis for EPA's objections to the DEIS included the following: (1) the DEIS did not adequately address reasonable alternatives as required by the Clean Water Act (CWA) Section 404(b)(1) guidelines and the NEPA regulations at 40 C.F.R. Part 1502.14; (2) there were serious deficiencies in geochemical predictions, inadequate discussion of effectiveness of mitigation measures and uncertainty that collectively may understate the long-term impacts to groundwater and surface water resources; and (3) the DEIS did not provide adequate information about financial assurance.

In the FEIS, the BLM and cooperating agencies addressed many of EPA's comments. The Agency's preferred alternative now includes several enhancements that, in comparison with the preferred alternative in the DEIS, should provide a greater level of protection to groundwater and surface water. We appreciate the responses to our comment letter and the additional information provided. The status of each of the issues that formed the basis for our rating on the DEIS is summarized below. Additional information is provided in the enclosure.

Adequacy of CWA Section 404(b) (1) Analysis

In our comments on the DEIS and in subsequent correspondence with the Corps of Engineers (Corps), EPA concluded that this project violates the CWA Section 404(b)(1) guidelines and the NEPA regulations at 40 C.F.R. part 1502.14, and that other alternatives need to be considered before filling waters of the U.S. We stated that an adequate analysis to determine the least environmental damaging practicable alternative (LEDPA) was not conducted and that only as a last measure should waters be impacted and converted out of jurisdiction. Since then, EPA has been working with the Corps, BLM, and the project proponent, P4, to address these issues. The FEIS includes a more robust discussion of alternatives and measures, including an adaptive management plan (AMP), to resolve issues about compliance with the CWA 404(b) (1) guidelines. The AMP provides a pathway to reduce the placement of fill and we support maintaining jurisdiction as Waters of the U.S. as discussed in the FEIS.

Adequacy of Geochemical Predictions, Effectiveness of Mitigation, and Disclosure of Uncertainty

Geochemical testing and modeling form the basis of predicting impacts to water quality from waste rock that would be backfilled or placed in overburden piles. EPA identified a number of issues that suggested that impacts to groundwater and surface water may be understated. To address these issues about potential impacts to water resources, EPA

recommended use of additional source control and mitigation measures, implementation of monitoring and reporting for early detection of problems, and adaptive management planning. The FEIS includes detailed responses to comments and additional information about geochemical predictions and uncertainty. The preferred alternative was revised to include expanded use of the GCLL cover system, addition of seepage collection systems below the external overburden piles, and enhancements to the water management and environmental monitoring plans. EPA supports these changes.

We have remaining issues, however, about the potential for release of contaminants to the Blackfoot River via groundwater pathways, due to the close proximity of the Blackfoot River to source areas, the short travel times, and likely presence of preferential flow paths. We recommend that the Record of Decision include clear direction regarding implementation of monitoring and reporting requirements for early detection of problems, and adaptive management and/or contingency plans to further reduce the potential for impacts to water quality. Together, the additional information, inclusion of additional mitigation measures, and requirements for implementation of monitoring, reporting, and adaptive management planning generally resolve our objections related to geochemistry and potential impacts to water resources. Our remaining issues and recommendations are discussed in Attachment 1, Specific Comments Related to Mine Performance and Water Resources.

Financial Assurance

One of EPA's primary issues leading to the EO-2 rating was that the DEIS did not include adequate information about financial assurance (FA). EPA recommended that BLM develop and disclose appropriate financial assurance information in the FEIS. This issue was discussed in follow up meetings with BLM, and BLM disagreed with EPA's recommendations on this matter. This issue is unresolved, and therefore EPA is retaining its objection to the EIS.

The project proponent, P4, shared its preliminary reclamation cost estimates for the Agency preferred alternative with EPA and posted the information on its website. EPA reviewed this information and found that most component elements that comprise the financial assurance estimate were generally consistent with cost engineering practices and well supported. EPA appreciates P4's willingness to discuss our comments and address them and share this information with interested stakeholders at this stage of the process. Our review comments on P4's preliminary estimate as well as further recommendations are enclosed (Attachment 2) for BLM's consideration in developing financial assurance requirements for this project.

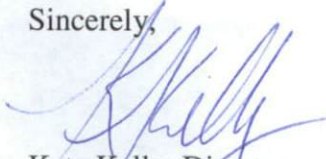
Disclosure of financial assurance information in EIS documents is an important issue to EPA. If information on FA is not disclosed in EISs, it is difficult for federal officials to make well-informed decisions about proposed mining operations on public lands, and for EPA or the public to evaluate the environmental consequences of a proposed mine. Per Council on Environmental Quality guidance, all relevant, reasonable mitigation measures that could improve the project are to be identified in an EIS and, to ensure that environmental effects of a proposed action are fairly assessed, the probability of the mitigation measures being implemented must also be discussed. Because the adequacy of the financial assurance is critical to determining the

probability of the mitigation measures being implemented, we believe the estimated amount and adequacy of the financial assurance should be discussed in the EIS.

EPA continues to raise this issue because inadequate financial assurance for reclamation and post-closure care has resulted in the abandonment of a great many mines in unsafe and unacceptable environmental conditions. In fact, compared with other sectors, cleanups in the mining sector have used a greater portion of the Superfund than any other single sector. It has been estimated that western hardrock mines are underbonded by billions of dollars, exposing state and federal governments to significant liability. Financial assurance at mines has been the subject of several Inspectors' General, GAO, National Academy of Sciences, and other reports for many years. This problem is not limited to historic mines. Phosphate and other mines permitted within the past 10 years frequently do not have adequate financial assurance and pose significant risks to human health and the environment, as well as financial risks to the public. Disclosure of financial assurance information in an EIS will help to ensure sound decision making and that the money to complete reclamation will be available, ultimately leading to better environmental outcomes.

Thank you for the opportunity to review this FEIS. Please feel free to contact Lynne McWhorter at (206) 553-0205 or by electronic email at mcwhorter.lynne@epa.gov with any questions that you may have.

Sincerely,



Kate Kelly, Director
Office of Ecosystems, Tribal and Public Affairs

Enclosure

cc: US Army Corps of Engineers
Idaho Department of Lands
Idaho Department of Environmental Quality

Attachment 1

Specific Comments Related to Mine Performance and Water Resources

Although more protective mitigation measures were added to the Blackfoot Bridge Final Environmental Impact Statement (FEIS), there are still some remaining issues related to the potential environmental impacts of the proposed phosphate mining project. The issues include:

- the potential effects of proposed contingency discharge measures
- lack of a chemical treatment plant, and
- a paucity of monitoring wells downgradient of the pits and overburden piles; (although we recognize that Idaho DEQ has proposed additional wells and specific monitoring and reporting requirements as part of its process to implement Idaho's Ground Water Quality Rule).

Some other more minor issues related to groundwater and surface water monitoring are also discussed in this review.

Contingency Discharge and its Potential Effects on Water Quality

One of the important improvements in the FEIS compared to the Draft EIS is the addition of an overburden seepage management system (OSMS) to control seasonal ponding of shallow groundwater in the East Overburden Pile and the Northwest Overburden Pile. According to the FEIS, collected seepage would be pumped to pond CP2 or waste management ponds (WMPs) 1 or 2 for evaporation (FEIS, p. 2-57). The water management ponds are intended for storage of groundwater from pit dewatering and stormwater runoff that does not meet surface water quality criteria (FEIS, p. 2-14). Therefore, water stored in the WMPs will generally be contaminated with mine-related constituents, including selenium.

Under emergency conditions, water can be pumped from the WMPs to the Mid Pit for infiltration to groundwater (FEIS, Section 2.4.1.1.11). The infiltration system for the Mid Pit is described in Chapter 2 of the FEIS:

The Mid Pit infiltration system would consist of a pond with a storage capacity of approximately 37-acre feet (not including two feet of freeboard) positioned above the dolomite or limestone backfill. This backfill would be highly permeable material that would allow rapid infiltration of ponded water into the underlying Wells Formation. Emergency pumping may be initiated if the volume of water in the water management ponds exceeds 90 percent of their design capacity (i.e., 634 acre-feet). This would provide 70 acre-feet of additional storage capacity in the ponds (not including freeboard) to handle incoming stormwater/pit dewatering flows while emergency pumping is initiated.

The WMPs will be lined with a synthetic lines and include a seepage collection system underneath the ponds, so infiltration to groundwater should be minimized. However, emergency pumping to the Mid Pit backfill would cause contamination of groundwater. The Wells

Formation outcrops in the Blackfoot River and is the source of seeps near the river, discharge to the river, and springs located to the west of the project area (FEIS, p. 3-57 and 3-73):

Gain-loss studies for Blackfoot River indicate that river gains approximately 2.5 to 4 cfs from groundwater as it passes north of the project area (Whetstone 2009b). About 0.5 to 0.9 cfs of the gain occurs near where the river crosses the Wells Formation, 650 feet north of the proposed North Pit. The remaining 2 to 3 cfs discharges from the basalt northwest of the project area (**Figure 3.3-8**). Six springs issue from the banks or bed of the river north of the proposed North Pit, where the Wells Formation is exposed at the surface or is thinly covered by alluvium or basalt. Nine springs issue from the south bank of the river near where it crosses the Aspen Range Fault (**Figure 3.3-8**).

Woodall Spring, North Woodall Spring, and the wetlands west of the project area are all areas of discharge for the regional groundwater flow system. The regional system also discharges into Blackfoot River north of the project area via a series of riverbank springs and by upwelling through the streambed (**Figure 3.3-8**).

And the Wells Formation was not able to substantially adsorb contaminants of potential concern (COPCs) (FEIS, p. 3-38):

The potential for rocks from Dinwoody Formation, Rex Chert, Grandeur Member and the Wells Formation to attenuate cadmium, copper, iron, manganese, nickel, selenium, sulfate, and zinc from overburden seepage was evaluated using batch adsorption tests (EPA 1992). The results of the tests suggest that cadmium may be adsorbed from solution by contact with rocks from the Dinwoody Formation. The tests did not indicate significant adsorption of other COPCs by project area rocks.

During mining, even under dewatering of the pits, water discharged under emergency conditions from WMPs could travel along preferential pathways to the Woodall springs, or potentially to the Blackfoot River, and increase concentrations of selenium and other mine-related contaminants. Instead of allowing the release of contaminated water to backfill in the Mid Pit (under emergency conditions), we suggest another lined storage area to be constructed for emergency releases. In addition, we recommend constructing a water treatment system for the site before operation begins. Depending on the capacity and design of such a system, the need for emergency discharge of contaminated water to groundwater could be eliminated or greatly reduced.

Chemical Treatment

No chemical treatment measures are proposed for the Blackfoot Bridge Mine, even as a contingency measure. The only "treatment" proposed in the FEIS are evaporative sprayers (FEIS, p. 2-58):

Based on the water balance for the project (**Section 2.4.1.1.10**), up to 12 evaporative sprayers may be employed to control the volume of water in WMP1

and WMP2. Under Alternatives 1A and 1B, the sprayers would be operated seasonally during the period of May through October when climatic conditions are optimal for evaporation. Based on pan evaporation rates for the climate station at Blackfoot Dam, each sprayer would be capable of evaporating approximately 17.6 acre-feet of water during this six month period. Use of the sprayers is not anticipated until mining begins below the water table in year 5, depending on the volume of stormwater routed to the water management ponds and the volume of groundwater pumped from the pits.

Contingency measures for contamination of surface water in the unnamed tributary to Fish Pond include (p. 2-62):

...allowing the water to evaporate; pumping the contaminated water into the OSMS system; discharging the water to CP2 for treatment by way of the northern diversion ditch; or comingling the ponded water with clean water from other ponds until discharge criteria are achieved.

Similarly, if water in seeps from the toe of the East Overburden Pile exceed water quality standards, (p. 2-62):

Action No. 3 would be implemented- P4 would excavate the seep or seeps to create a collection sump for water. Water in the sumps would be pumped or drained through a lined ditch to the OSMS. Seepage from the sump would be transported to CP2 or the WMP (water management pond) system for treatment. If the water quality associated with a seep reflects natural groundwater conditions, P4 would review the need to capture and convey the seep water.

Given the close proximity of the site to the Blackfoot River, and the high likelihood for mine contact water to be contaminated with selenium, construction of an active chemical treatment plant before mining begins at the site is appropriate. The system could be constructed in phases and expanded over time if the need arises. Relying entirely on evaporation and shuttling of water around the site may not provide the environmental protection for surface water that will be required to meet water quality objectives for the site.

Environmental Monitoring Issues

Appendix A of the FEIS describes the proposed environmental monitoring scheme. A number of shortcomings are noted as follows in the surface water and groundwater monitoring programs. Again, we note that several of these shortcomings will be addressed if groundwater monitoring requirements proposed by Idaho DEQ are adopted as proposed.

- The FEIS identifies limited groundwater monitoring wells located between the North Pit/NW Overburden Pile and the Blackfoot River at MW-13A and MW-14W, and they are located very close together (see Figure 2, Appendix A). MW-13A is completed in alluvium, and MW-14W is completed in the Wells Formation. We also note that

additional monitoring may be required through implementation of EPA's Multi-Sector General Permit (MSGP). Based on the available information in the FEIS, we believe additional three wells should be added downgradient of the pit and overburden pile and upgradient of the river. These wells should also have the capability of being converted to pump-back wells if contamination is detected. Because of the close proximity of the NW overburden pile and North Pit to the Blackfoot River, wells should be monitored on at least a monthly basis for constituents of concern including selenium, total dissolved solids (TDS), sulfate, cadmium, iron, manganese, nickel, nitrate, and zinc. During periods of high vulnerability (such as when mining begins in the North Pit area, when groundwater is allowed to rebound in that area or when/if contaminants are detected) monitoring should be increased to weekly.

- Drainage from the Mid Pit and the South Pit both generally flows to the east toward State Land Creek. There is one upstream and one downstream surface water monitoring point on this creek. Mid Pit probably also flows toward Fish Pond. There aren't really any downgradient monitoring points for Mid Pit/East Pit (although MW10A and MW-11Da&b might be downgradient of a certain small portion of the Mid Pit). The only downgradient monitoring points for the South Pit are MW-2R and MW-3A, and they are right next to each other (See Figure 2, Appendix A). More groundwater monitoring points are needed for all of the pits.
- Surface water and groundwater monitoring are proposed only twice a year – spring and fall. Monitoring should be at least quarterly during the first five years of operation to avoid any potential spread of contamination from the mine.
- Springs could be one of the first indicators of the movement of mine-related contaminants to streams. Figure 1 in Appendix A has locations SW20-SP and SW21-SP identified as "Blackbook River Bank Spring." Perhaps this is a typographical error and should be "Blackfoot River." A greater need is that there is no information on the identity of the springs to be sampled or any indication of whether the springs issue from the Webb Fm or other formations. It is important that the springs be sampled separately and not collected all in one sample bottle so potential high concentrations from one spring will not be diluted by lower concentrations from other springs. Field measurements, especially specific conductance, should be used to identify which springs should be sampled during the surface water sampling endeavors.
- Quantification limits for arsenic in groundwater and surface water are too high (0.003 mg/L). EPA Method 200.7 (ICP-AES) may not be able to achieve a lower detection limit, but EPA Method 200.8 (ICP-MS) can and usually has a quantification limit of at least 0.001 mg/L, which is 1/10 the groundwater standard. Quantification limit should be lowered to 0.001 mg/L.
- The acceptable cation/anion balance in Tables 1 and 3 in Appendix A is listed as <0.20%. This appears to be an error as it should be <±20%.

In summary, several important mine operation procedures should be improved before the Blackfoot Bridge Project is approved. Contingency plans for emergency management of mine contact water should be developed or further refined that do not threaten groundwater, spring, and Blackfoot River water quality. Ideally, another lined storage water impoundment should be created and associated with a chemical treatment plant. In addition, a more robust groundwater monitoring system should be created that includes more wells downgradient of all the pits and

overburden piles. Wells located between the North Pit/Northwest Overburden Area and the Blackfoot River should be expanded so that a fence of pumpback wells could be created if increasing concentrations of selenium are identified in the wells. Monitoring should be increased to least a monthly basis for locations downgradient of the North Pit and the Northwest Overburden Pile, and to a quarterly basis for all other locations. And there should be triggers for more frequent monitoring and reporting when conditions exist that indicate higher vulnerability.

Attachment 2

Blackfoot Bridge Project

EPA Financial Assurance Analysis

December 2010

This analysis compares potential EPA CERCLA release response action financial responsibility requirements and the existing Bureau of Land Management regulations and proposed financial assurance for the Blackfoot Bridge Project, a proposed phosphate rock mine in Southern, Idaho administered by the BLM and Idaho State Lands Department. The analysis assesses whether the financial assurance cost estimate reflects costs for the following nine tasks identified by EPA as representative of ideal elements of a mine reclamation program that would address potential CERCLA release response requirements:

1. Interim operations and maintenance
2. Water management and treatment
3. Hazardous wastes/hazardous substances
4. Demolition, removal, and disposal
5. Earthworks
6. Revegetation
7. Mitigation
8. Long-term operations and maintenance
9. Monitoring

The following pages identify the BLM regulations applicable to each task area and summarize how the Blackfoot Bridge Project financial assurance cost estimate captures the costs for the EPA nine model mine reclamation tasks, as well as indirect costs.

Applicability of BLM Regulations and Financial Assurance

Table 1 provides summarized a comparison of the EPA CERCLA release response action task areas with the applicable BLM regulations under 43 CFR 3500, Leasing of Solid Minerals other than Coal and Oil Shale; and BLM regulations under 43 CFR 3809, Mining Claims Under the General Mining Laws, Surface Management.

For each task area, the table uses a color-coding scheme to display whether the Blackfoot Bridge Project cost estimate captures requirements identified in the applicable environmental documents, as well as applicable BLM requirements.

- YES (green cells) indicate a reasonable certainty that the cost estimate fully captures the requirement from the applicable environmental document, guidance, or regulation;
- PARTIAL (yellow cells) indicate that the cost estimate either partially or mostly captures the requirement from the applicable environmental document, guidance, or regulation, or

that it is unclear whether a calculation in the cost estimate meets the standards or the requirement;

- NO (red cells) indicate that the cost estimate does not adequately capture the requirement from the applicable environmental document, guidance, or regulation.

The table only indicates what is captured in the Blackfoot Bridge Project cost estimate, as indicated by the Alternative 1A reclamation cost estimate dated April 16, 2010.

Table 1
Blackfoot Bridge Project
CERCLA Response Task Area and Applicable BLM Regulations and Financial Assurance

Task Area		Applicable Rules and Regulations		Financial Assurance Estimate	
No	Description	BLM 3500 Regulations (43 CFR § 3500)	BLM 3809 Regulations (43 CFR § 3809.401)	Activity Description	Estimated Cost
	DIRECT COSTS				
1	Interim Operations and Maintenance		The financial guarantee must cover any interim stabilization and infrastructure maintenance costs needed to maintain the area of operations in compliance with applicable environmental requirements while third-party contracts are developed and executed [43 CFR 3809.552(a)]	Interim operations and maintenance (one-year); diesel for water handling pumps, pump maintenance and replacement, evaporator electricity and maintenance	\$104,282
2	Water Management and Treatment		Financial responsibility must be established to ensure the continuation of long-term treatment to achieve water quality standards. [43 CFR 3809.552(c)]	Post-closure solution management - ten years using 2.1% net discount factor; diesel for water handling pumps, pump maintenance and replacement, evaporator electricity and maintenance, annual inspection of ponds, culverts and piping	\$1,020,876
3	Hazardous Waste/ Substances		Redamation shall include, but shall not be limited to, measures to isolate, remove, or control toxic materials. [43 CFR 3809.420(b)(3)]		
4	Demolition, removal and disposal of facilities and equipment			Foundation burial	\$31,500
5	Earthwork	Grading, backfilling, soil stabilization, compacting and contouring. [43 CFR 3505.45(c)]	Redamation shall include, but shall not be limited to: saving of topsoil for final application after reshaping of disturbed areas has been completed. [43 CFR 3809.420(b)(3)] Reshaping the area disturbed, application of the topsoil, and revegetation of disturbed areas, where reasonably practicable. [43 CFR 3809.420(b)(3)]		
6	Revegetation	The Mine Plan must include the method of soil preparation and fertilizer application, and planting, including approximate quantity and spacing. [43 CFR 3505.45]	Revegetation of disturbed areas. [43 CFR 3809.420(b)(3)]	Site Works and Revegetation: Overburden piles, pits, roads, ponds, disturbed areas; recontour, place engineered cover, scarify, spread seed and mulch	\$11,741,249
7	Mitigation		Rehabilitation of fisheries and wildlife habitat. [43 CFR 3809.420(b)(3)]		\$700,000
8	Long-term Operations and Maintenance		The financial responsibility must be adequate to provide for construction, long-term operation, maintenance, or replacement of any treatment facilities and infrastructure, for as long as the treatment and facilities are needed after mine closure. [43 CFR 3809.552(c)]	Long-term site maintenance ten years using 2.1% net discount factor; labor, seeding, weed monitoring/treatment, regrading, BMP maintenance	\$117,754
9	Monitoring		The operator must monitor to detect potential release of contaminants from heaps, process ponds, tailings impoundments, and other structures, and remediate environmental impacts if leakage occurs. [43 CFR 3809.420(b)(12)]	Monitoring ten years using 2.1% net discount factor; stormwater sampling, annual site inspections, groundwater and surface water sampling, bald eagle survey/monitoring, GCLL inspection, cover system lysimeter monitoring and data review	\$2,035,708
	TOTAL DIRECT COSTS				\$15,751,369

INDIRECT COSTS				
Engineering Redesign			4% of site works and post-closure solution management	\$488,735
Mob/Demob			3% of demo, site works and revegetation	\$353,182
Contract Administration			4.5% of direct costs	\$708,812
Contingencies			10% of direct costs	\$1,575,137
Insurance			1.5% of direct costs	\$236,271
Bond (performance)			1.5% of direct costs	\$236,271
Bond (payment)			1.5% of direct costs	\$236,271
Contractor Profit			10% of direct costs	\$1,575,137
Indirect Agency Overhead			4.5% of direct costs	\$708,812
SUB-TOTAL INDIRECT COSTS			39%	\$6,118,626
TOTAL ESTIMATED COSTS				\$21,869,995

1. Interim Operations and Maintenance

The elements of interim operations and maintenance are those that are necessary for the responsible agency (e.g., BLM) to operate, maintain, and monitor the mine to assure public safety and environmental protection until funding is secured; engineering, site management, and construction contracts awarded; and mine cleanup tasks completed. Immediate actions may include installation of signs, fences, gates, berms, and closures of adits. Other actions prevent egress to open pits, underground mine openings and unsafe buildings. Other immediate issues could include site security, securing access, including road maintenance and snow removal; maintaining utilities and fences.

The Blackfoot Bridge Project financial assurance estimate includes interim operations for one year with costs based on operating and maintaining water handling pumps and evaporators. While the costs of fuel, electricity, maintenance and replacement are addressed, the estimate does not include any other costs including for labor, vehicles, or other equipment necessary to perform the identified water management tasks. In addition, the estimate does not identify any other interim operations and maintenance tasks including securing the site and water management ponds, securing access, or otherwise addressing the site (e.g. fencing to prevent wildlife egress onto areas with high selenium vegetation).

2. Water Management and Treatment

Water management and treatment issues at the Blackfoot Bridge Project are mostly associated with stormwater management and potential management of selenium contaminated leachate from overburden piles and from backfilled open pits.

The Blackfoot Bridge Project financial assurance estimate includes water management and treatment operations for ten years with costs based on operating and maintaining water handling pumps and evaporators. While the costs of fuel, electricity, maintenance and replacement are addressed, the estimate does not include any other costs including for labor, vehicles, or other equipment necessary to perform the identified water management tasks. In addition, the cost estimate does not include any additional costs to address selenium contamination from the overburden which would be captured in the leachate collection system and transported to the water management ponds, or for selenium contamination which could be detected and captured in backfilled pits or as a result of groundwater interception. While it is acknowledged that the

intent of the cover system is to prevent infiltration of leachate, it is EPA's contention that the cover system will not perform in a manner so as to prevent infiltration altogether, particularly over time, and a contingency for longer term water treatment should be considered together with commensurate financial assurance.

3. Hazardous Wastes / Hazardous Substances

The work in this section includes the collection and disposal of hazardous materials from the mine site. Hazardous waste and substances may include the following:

- Maintenance shop chemicals and petroleum products.
- Mill reagents, chemicals, and petroleum products.
- Laboratory reagents, chemicals, and waste products.
- Mine explosives.
- Chemicals and reagents in storage areas.
- Residues and other contents in storage tanks and barrels.
- Contaminated soils or other materials.

The Blackfoot Bridge Project financial assurance estimate does not include any provisions for hazardous waste/substance removal. While it is unlikely that a significant amount of chemicals or other hazardous materials will be utilized at the site, and explosives can likely be returned to the supplier at no cost, some provision should be allowed in the financial assurance estimate for the effort and associated costs required to investigate and undertake to ensure that hazardous substances are not present. It is not uncommon for at least some amount of material requiring special disposal to be present at most mines.

4. Demolition, Removal, and Disposal of Facilities and Equipment

This activity includes the demolition, removal, and disposal of all mine facilities, equipment and materials. The Blackfoot Bridge Project financial assurance estimate includes the costs for foundation burial but assumes that the crusher, screening plant, loadout and conveyors will be removed at no cost. Those items would most likely belong to the bankruptcy trustee who would require time to sell and have them removed provided they can find buyers to do so. Otherwise, the responsible agency would potentially incur the cost of removing those materials in order to perform reclamation. The risk of equipment abandonment is directly proportional to the condition of the equipment and market conditions at the time of abandonment.

5. Earthworks

Earthwork involves reshaping and other activities to return the reclaimed area to a sustainable condition (generally providing stable slopes and a vegetative cover). It includes the surface cleanup, mine opening closure, backfill areas; and placement of topsoil or an alternative growth medium. The construction of storm water and run-on and runoff diversion channels and stream restoration is also considered earthwork. Proper construction of earthworks for storm water diversion has impacts on water management.

The Blackfoot Bridge Project financial assurance cost estimate includes recontouring, cover material appropriation and placement for the overburden piles, pits, roads, ponds and other disturbed areas. The costs associated with those tasks appear to be adequate to perform them as specified in the estimate.

6. Revegetation

Revegetation is a key component needed to control infiltration by maximizing plant evapotranspiration and controlling percolation through the cover into underlying waste materials. In cases where waste materials containing contaminants such as selenium are present, revegetation is a key component in engineered water barrier and water balance type covers. It is used to control erosion and provide surficial stability to reclaimed slopes.

The Blackfoot Bridge Project financial assurance cost estimate includes scarifying, spreading seed and mulching over disturbed areas following earthworks tasks. The costs associated with those tasks appear to be adequate to perform them as specified in the estimate.

7. Mitigation

Mitigation consists of requirements to avoid, minimize, reclaim or compensate for environmental or natural resource damages caused by mining operations. Wetlands enhancement or construction will be done to compensate for wetlands that are unavoidably impacted by operations. The details are provided in the Compensatory Mitigation Plan. Stream restoration will occur as part of the reclamation of the mine site. Stream restoration occurs when tailings or other contaminants are present. Stream flow augmentation, another form of mitigation, may be performed to make-up for impacts from groundwater dewatering and surface diversions that affect baseline and peak flows. Augmentation also may be done to enhance fisheries habitat or spawning. Fisheries habitat enhancement includes the creation of riparian area buffer zones and improvements and creation of specific stream features. Wildlife habitat enhancement can take a variety of forms and may include land exchanges, range improvements, and transplantation.

P4 has identified \$700,000 for wetland restoration and construction related to compensatory wetland mitigation. In the event impacts to other resources (e.g. aquatic life) were to occur as part of an unplanned release additional mitigation could be identified including related to natural resource damages. As there is no basis for an estimate if such an event were to occur, it is not unreasonable for this cost to be addressed by environmental liability insurance or some other risk-appropriate instrument rather than traditional forms of financial assurance.

8. Long-term Operations and Maintenance

Long-term operations and maintenance involves facilities that have an indefinite design life or have on-going maintenance requirements. Examples of such facilities include:

- storm water run-on and runoff diversion ditches,
- runoff diversion and catchment ponds,
- covers,
- long-term stability of site features including tailings impoundments, heap and dump leach piles, and waste rock piles.
- roads for access,
- public safety features,
- fences and gates,
- vegetation.

Engineered facilities by their nature can meet their expected performance only if they are maintained and replaced when they no longer meet the intended specifications. For example, covers may erode or rock pile instability may occur resulting in unintended contamination of groundwater and or surface water. Since the facilities are essentially intended to last forever in terms of meeting their design specifications, an assumption of future requirements to maintain the facilities' performance is important in hardrock mine cost estimation.

The Blackfoot Bridge Project financial assurance cost estimate includes ten years costs for labor, seeding, weed monitoring/treatment, regrading and BMP maintenance. The costs allow for one day of equipment (dozer), one week of labor seeding, and one per year weed monitoring/treatment and BMP maintenance. Experience at other sites where engineered covers accompanied by stormwater systems are utilized show that periodic maintenance exceeding that estimated for the Blackfoot Bridge Project is likely to occur every 10-20 years (more or less) resulting in typically partial but in some cases complete reconstruction of covers and stormwater features with significant potential costs.

9. Monitoring

Monitoring is typically performed for surface and groundwater quality, surface flow and groundwater level, vegetation performance, and wildlife. Monitoring may also include erosion and stability measurements. Monitoring for vegetation, other performance characteristics, and stability is a key component of establishing financial responsibility release. When standards are met, the item may be considered closed and the financial responsibility released for that item. Monitoring should be conducted until the established performance standards or release criteria have been met. Monitoring activities include tasks such as sampling, lab testing, data analyses, and reporting.

The Blackfoot Bridge Project financial assurance cost estimate includes ten years annual costs for stormwater sampling, annual site inspections, groundwater sampling, surface water sampling, bald eagle survey/monitoring, GCLL inspection as well as cover system lysimeter monitoring and data review, habitat monitoring and soil and vegetation chemistry monitoring. The annual cost is estimated to be approximately \$220,000 per year. The need for extensive monitoring highlights the potential risks associated with similar projects in the area. Much more extensive monitoring costs could result if unpredicted water quality impacts result from this project.

10. Indirect Costs

Indirect costs include contingency, engineering redesign, mobilization/demobilization, contractor overhead and profit, agency contract administration and agency indirect costs.

The Blackfoot Bridge Project financial assurance cost estimate includes indirect costs for engineering redesign, mobilization/demobilization, contract administration, contingencies, insurance, bonding, contractor profit and indirect agency overhead. The indirect costs total 39% of the direct costs which is slightly below that typically suggested for agency use (e.g. 45-50%).

The estimate uses a discount rate factor of 2.1% (net rate of return) to determine the net present value of long-term financial assurance. This rate is conservative and consistent with federal guidance.

Conclusions

The Blackfoot Bridge Project financial assurance estimate reflects the project proponent and BLM's perception of the present project risks. To a significant degree it depends on the performance of the proposed cover system over segregated selenium bearing waste materials to prevent groundwater and/or surface water contamination. If their prediction holds true then the proposed financial assurance amount contains most of the required elements to reclaim the site and any shortfalls only present nominal risk (e.g. <\$1,000,000 per occurrence). However, the cover and stormwater systems at the least will require significant maintenance and it is probable that additional maintenance costs over the long-term will be incurred and present a long-term risk given that the present financial assurance estimate does not expect such costs beyond ten years in the future. In the event the segregation and cover system fails to mitigate the potential for selenium contamination to water resources the proposed financial assurance would be grossly inadequate and could result in costs in excess of \$10 million and possibly \$100 million or more at the site. Given the past history at nearby sites a more conservative approach to the financial assurance estimate is warranted (e.g. assumption of 100-yr operation and maintenance period with additional preventative maintenance costs) until such time as actual on-the-ground results have been proven in terms of adequate mitigation of selenium issues.